

DOCUMENT RESUME

ED 231 519

PS 013 706

AUTHOR Freedberg, Louis
TITLE America's Poisoned Playgrounds: Children and Toxic Chemicals.
INSTITUTION Conference on Alternative State and Local Policies, Washington, DC.
REPORT NO ISBN-0-89788-074-9
PUB DATE 83
NOTE 59p.; Funded by grants from the Resource Fund of the Youth Project and the Ruth Mott Fund.
AVAILABLE FROM Conference on Alternative State and Local Policies, 2000 Florida Avenue, N.W., Washington, DC 20009 (Paper, \$5.95; discount available on quantity orders.)
PUB TYPE Guides - Non-Classroom Use (055) -- Reports - Research/Technical (143)
EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Children; *Environmental Influences; *Health; Lead Poisoning; *Parks; Pesticides; *Playgrounds; *Poisons; Public Policy
IDENTIFIERS Arsenic Poisoning; *Health Hazards; Wood Preservatives

ABSTRACT

Next to chemical and farm workers, today's children are at the greatest risk from toxic chemicals. Through their normal play activities, children are exposed to a frightening array of toxic hazards, including lead, pesticides, arsenic, and unknown dangers from abandoned landfills and warehouses. Through a series of documented examples, the author of this discussion suggests the need for new policies to be set by public officials at both the state and local levels. These policies concern the determination of playground area sites, construction settings, and maintenance, as well as closure and clean-up of abandoned industrial sites. Also described are extensive policy recommendations dealing with reducing the dangers of (1) parks built on landfills, (2) lead deposits in freeway parks and playgrounds, (3) pesticides used in playgrounds, and (4) wood preservatives in playground equipment. (MP)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

AMERICA'S POISONED PLAYGROUNDS:

CHILDREN AND TOXIC CHEMICALS

ED231519

PS 013706

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

- ☒ This document has been reproduced as received from the person or organization originating it.
- ☐ Minor changes have been made to improve reproduction quality.
- Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS
MATERIAL IN MICROFICHE ONLY
HAS BEEN GRANTED BY

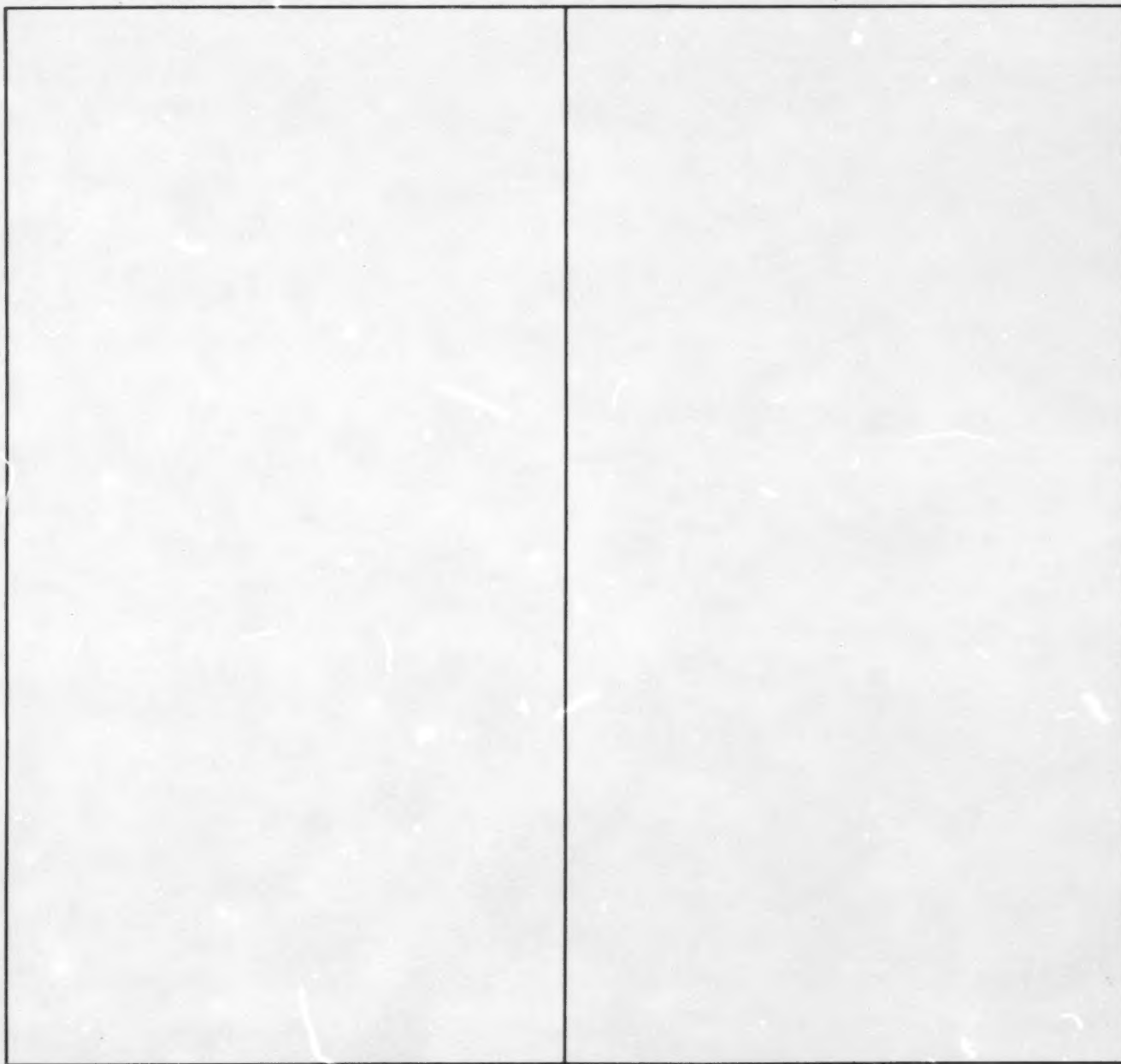
*George Lehman/
Conf. on Alternatives
State + Local Policies*
TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

YOUTH NEWS

CONFERENCE ON ALTERNATIVE STATE AND LOCAL POLICIES

AMERICA'S POISONED PLAYGROUNDS:

CHILDREN AND TOXIC CHEMICALS



By Louis Freedberg
Youth News
1983

Youth News is a non-profit, tax-exempt organization based in Oakland, California. It produces youth oriented radio programs, trains high school students as news reporters, and does research on children and youth issues with public policy implications. It is part of Youth Communication, a nationwide network of youth-oriented newspapers based in Los Angeles, Chicago, New York, Philadelphia, Wilmington, DE, and Cleveland.

"America's Poisoned Playgrounds" was written by Louis Freedberg, Ph.D. Freedberg is director of special projects for Youth News. For several years he directed diagnostic services for children exposed to environmental stressors. He formerly worked for the Carnegie Council on Children and the Childhood and Government project at the University of California at Berkeley.

For more information on Youth News and Youth Communication, write to: 1419 Broadway, Suite 433, Oakland, CA 94612.

Additional copies of this report can be obtained for \$5.95 from: Conference on Alternative State and Local Policies, 2000 Florida Avenue, NW, Washington, DC 20009

The Conference is a national clearinghouse and policy research center for state and local officials and community leaders. In addition to providing research, analysis, and technical assistance, the Conference organizes frequent national and regional conferences and operates a nationally recognized publications program featuring innovative policy studies and legislative proposals.

Copyright: Youth News, 1983

ISBN: 0-89788-074-9

ACKNOWLEDGEMENTS

"Poisoned Playgrounds" was funded by grants from the Resource Fund of the Youth Project and the Ruth Mott Fund. Assistance was provided by Fran Scullion of the Delaware Valley Toxics Coalition in Philadelphia, Thom Clark and Dan McGerr of the Center for Neighborhood Technology in Chicago, and Darrell Moore of Youth Communication in New York. Youth News correspondent Nadia Milleron did research in Washington, DC where she was based at the Youth Policy Institute of the Robert F. Kennedy Memorial. In addition, valuable assistance was provided by the following: Mike Belliveau, Steve Dreistadt and Dr. Robert Ginsburg of Citizens for a Better Environment; Sheila Daar of the John Muir Institute; Robert Schlag of the California Department of Health Services; Sandy Close of Pacific News Service, and Lee Webb, Jeffrey Tryens, Jenifer Weiss and Marge Levy of the Conference on Alternative State and Local Policies. Ken Geiser of the Department of Urban and Environmental Policy of Tufts University helped develop the policy recommendations.

Shorter versions of some sections of this report were first published by Pacific News Service in October 1982. The chapter on wood preservatives in playground equipment was researched and written by Jonathan King and Maureen O'Neill of the Children and Environmental Regulations Project of the Center for Investigative Reporting in San Francisco.

TABLE OF CONTENTS

Chapter I:	
America's Poisoned Playgrounds: Overview and Major Findings.....p.	1
Chapter II:	
Landfills, Parks and Toxic Chemicals.....p.	5
Recommendations: Siting of Parks and Playgrounds.....p.	9
Chapter III:	
"Inner City Canaries": Children and Abandoned Industrial Plants.....p.	11
Recommendations: Abandoned Industrial Plants.....p.	17
Chapter IV:	
Playing with Pesticides.....p.	19
Recommendations: Pesticide Use In Parks and Playgrounds.....p.	26
Chapter V:	
Lead in Freeway Parks.....p.	29
Recommendations: Lead in Parks and Playgrounds Near Freeways.....p.	35
Chapter VI:	
Wood Preservatives in Playground Equipment.....p.	37
Recommendations: Wood Preservatives in Playground Equipment.....p.	43
Chapter VII:	
Eliminating Playground Hazards: Future Directions.....p.	45
Recommendations: Standards and Public Education.....p.	47
Chapter VIII:	
Resources for Action.....p.	49

AMERICA'S POISONED PLAYGROUNDS: OVERVIEW AND MAJOR FINDINGS

Normal Street, Chicago, Garden Street, Philadelphia. Boy Scout Drive, Salt Lake City. Love Canal, New York, Times Beach, Missouri. Under normal circumstances, these names would have evoked images of Main Street, U.S.A., of pleasant residential areas where families work and live. Instead, they are all places where the health and safety of children have been endangered. They have also become monuments to the poor use of open space. In Chicago, children played in the abandoned Mertz Paint Company at 1638 Normal Street -- a building containing thousands of gallons of toxic chemicals. Only when the city was threatened with a lawsuit was the hazard eliminated. In the Philadelphia neighborhood of Bridesburg, successive generations of children playing in Garden Street immediately adjacent to the Philadelphia Coke Company were blackened by potentially hazardous coke dust fallout. The problem was solved when the plant shut down, a victim of the recession and changing technologies. Rose Park on Boy Scout Drive in Salt Lake City was built on top of a land fill used for decades to dump petroleum wastes. The site is now on the EPA's top priority list for cleanup under the federal government's \$1.6 billion Superfund program.

There are other similar examples from communities across the country. A six month survey by Youth News of major urban areas revealed that very little attention has been paid to the safety of places where children play. The survey, conducted between June and December, 1982, included interviews with park administrators, environmental organizations, parents and children, as well as numerous site visits. Basic research was undertaken by Youth Communication in New York, the Delaware Valley Toxics Coalition in Philadelphia, the Center for Neighborhood Technology in Chicago, and by Youth News. The San Francisco-based Center for Investigative Reporting did research on the hazards of wood preservatives in playground equipment. While the focus was on major urban areas, information was also gathered from other communities where children have been exposed to potential hazards in play areas.

The survey found that, in many cases, playgrounds are constructed in open spaces that no-one else wants -- under freeways, on top of landfills, on sites of abandoned industrial plants. In other cases, children are exposed to hazardous chemicals in warehouses transformed into makeshift playgrounds, to pesticides sprayed indiscriminately in parks or recreation areas, or to toxic wood preservatives in playground equipment.

Playgrounds are in many ways a microcosm of the overwhelming problems faced by local communities trying to cope with the complete inundation of the urban environment by hazardous chemicals over the past half century. Over 70,000 chemicals are in current commercial use. An additional 2,000 are synthesized and introduced into the environment annually. Over 172 billion pounds of the top fifty synthetic organic chemicals are produced each year. In 1978, a mere 1605 chemical plants, owned by 53 companies, produced 66 million tons of hazardous wastes. According to EPA estimates, over 90% of hazardous wastes are handled in ways violating federal standards. Over 35,000 pesticide products are available in the U.S.; total pesticide use in the U.S. probably exceeds 1 billion pounds each year. Some studies indicate that the urban environment is saturated with pesticides at a rate far higher than agricultural areas.

It is not surprising that some of these chemicals have found their way into parks and playgrounds. Yet incredibly poor design errors have exacerbated the problem. There has also been little awareness that children are uniquely susceptible to these chemicals. Next to chemical workers who have direct contact with toxic substances, children are the sector of the population at greatest risk.

Nor are health effects on children immediately obvious. Reactions to toxic chemicals are often mistaken for allergic responses, mysterious rashes, and stomach and headaches of unknown origin. The long term health effects are even more difficult to identify. The consequences of being exposed to a suspected carcinogen are not likely to manifest themselves for decades.

Not all parks and playgrounds are dangerous. But sufficient caution has not been exercised to ensure that chemical hazards of all kinds are prevented or eliminated. In addition, a single exposure will not necessarily have a negative health effect, although that is certainly a possibility. Much more research has to be done on the synergistic or combined effects of various chemicals on children. Virtually all "safety" standards have been set for single chemicals, not for combinations of chemicals. The standards that do exist are for a male weighing 132 lbs., not for small or developing children. What are the effects to children exposed to pesticides as well as lead from freeway traffic in the same park? How do these exposures interact with chemical hazards in the home? What is the potential impact of pesticide "soups" sprayed in parks, playgrounds and school grounds?

In the next four chapters, we look at the dangers of parks built on land fills, of lead deposits in freeway parks and playgrounds, of pesticide use in playgrounds, and of wood preservatives in playground equipment. What emerges is a

landscape of potential, often low level, hazards in communities across America, in some of our most common place environments. Because the dangers faced by children in these communities are by no means as dramatic as at Love Canal or Times Beach, these everyday environments receive little attention. Yet they are contributing to the overall level of toxicity that children face in our 20th Century environment.

Our major findings are:

°Local governments do not have the resources or have not made it a priority to identify abandoned industrial plants which may contain toxic chemicals. Those warehouses are often transformed into playgrounds by children, who may then be exposed to potentially hazardous chemicals.

°Studies in several communities surveyed indicate high levels of lead in parks and playgrounds constructed under or near freeways. These lead deposits from freeway traffic may be contributing to elevated blood lead levels of children who play there. The hazard has been well-documented in the scientific literature. Yet few efforts have been made to eliminate the hazard on a federal, state or local level, even when excessively high lead levels have been identified in playgrounds through soil tests.

°Parks and playgrounds are often built on top of allegedly "safe" landfills, without adequate testing for toxic chemicals that may have been dumped there. Case after case of parks on landfills which later turn out to contain toxic substances have been documented.

°Playgrounds are often built on the least desirable sites -- on property no-one else wants or which has little commercial value. Very often these sites are in mixed residential-industrial areas, with a high probability that toxic substances may have been dumped there, often decades previously. Yet local governments rarely do adequate reviews of a site's previous use to establish its safety before commencing construction. Nor do they do exhaustive testing of soils on the site. In addition, there is not routine collaboration between public works departments and health departments to minimize potential health risks in proposed playground sites.

°Pesticide use in parks and playgrounds is often inadequately supervised, with little regard to the potential health risks to children, especially immediately after spraying when a pesticide may still be toxic. Few or no efforts are made to keep children out of newly sprayed areas. Pesticides are widely used in parks and playgrounds, even though safe levels of pesticide exposure have not been established for children by the EPA or other regulatory agencies.

°Toxic chemicals are used as wood preservatives on playground equipment -- often at levels far higher than those regarded as "safe" for adults. In spite of explicit warnings from experts, the EPA and other federal regulatory agencies continue to allow the use of hazardous levels of wood preservatives in playgrounds and have done minimal or no research on potentially safer alternatives.

°Research on what are "safe" levels for children of exposure to a wide range of toxic substances has been grossly inadequate. Most existing standards are for adults, not for children. Virtually no research has been done on the combined or synergistic effects of toxic substances on children. This has made it difficult for state and local governments to enact "safe" standards for children. Lack of standards for children has also made it more difficult for parents and neighborhood groups to organize against the use of certain substances, such as pesticides and wood preservatives.

°Once a problem has been identified in a park or playground, local and state agencies are often caught in a confusing regulatory and legal web that does not clearly indicate who is responsible -- and who pays -- for cleaning up a hazard. This is especially the case when the responsible party cannot be traced, or refuses to pay clean-up costs. As a result, eliminating playground hazards proceeds slowly, is only partially dealt with, or is stalled altogether while regulatory agencies attempt to establish responsibility. Too often regulatory agencies are spurred into action only when a crisis develops, or political pressure mounts to an uncomfortable level.

°Many of the problems documented in this report could be avoided if local governments conceptualized playgrounds as micro-environments and systematically sought to cope with all sources of toxic contamination. Levels of contamination could be reduced or eliminated with better planning and, in some cases, very simple design decisions.

°The level of awareness among children and parents about potential hazards in play areas is extremely low. With greater awareness, parents and children could themselves reduce the possibility of exposure to health-threatening substances. Yet state and local governments have done little to alert residents to potential hazards.

LANDFILLS, PARKS AND TOXIC CHEMICALS

It started as a routine excavation to expand the Mabel Davis Park behind the Internal Revenue Service building in Austin, Texas in May, 1979. But when hundreds of fish died in a nearby pond, city officials became concerned about what bulldozers may have uncovered at the site. The park lies on top of the old St. Edwards Landfill, a municipal garbage dump which had ceased operating over two decades ago.

An investigation revealed that several bags of pesticides, including DDT, Lindane and Toxaphene, had lain undisturbed under the ground since they were dumped there in the 1950's by Acock Laboratories, a now defunct pesticide manufacturer. The pesticides, still in their original paper sacks, had hardly decomposed and were highly toxic.

Official immediately halted construction on the proposed baseball diamond and swimming pool. Roads to the park were blocked off, and a clean-up effort lasting six months was begun. Over 2500 cubic feet of contaminated soil had to be removed before the city could go ahead with its construction plans.

Austin is not the only community now grappling with the consequences of an approach to building parks that in retrospect seems short-sighted and dangerous. Cities across the country have routinely turned landfills -- ordinary garbage dumps -- into parks with virtually no knowledge of what was originally dumped there. In the Austin area alone, ten old city landfills have been converted to other uses. The Mabel Davis problem "could be just one of many in Austin that we don't know about," a state water department official warned. When many of the landfills were active in the 1940's and 1950's there were no regulations governing the dumping or disposal of toxic chemicals like DDT. "You could dump anything there," said an Austin parks official.

At least two parks on the EPA's list of top priority hazardous waste sites are targeted to receive aid from the Superfund. Rose Park, located on Boy Scout Drive in Salt Lake City, was built on a former landfill and was used to dispose petroleum wastes from the 1920's until 1957. The EPA report states dryly: "The sludge has been exposed at this site creating a hazard to park users by direct physical contact."

In Harrison Township, Pennsylvania, a park built on top of a dumpsite used from the mid 1920's to the mid 1950's is also slated for EPA action. The site, known ominously as Lindane Dump, was used as a dumping ground for the pesticide Lindane in bulk powdered form for an unknown period of time.

"In virtually every case once a landfill is completed the first thing government thinks of is to put in pretty grass, and tell the community 'we're going to put in a lovely park in your community,'" says Lois Gibbs, president of the Love Canal Homeowners Association, and the moving force behind the relocation of hundreds of families from the Love Canal community near Niagara, New York. "That's the way they sell the landfill to the people," she says.

There are now plans to convert the former Love Canal site to a park, in light of an EPA review declaring the site "safe." But Gibbs argues that no park should ever be built on top of a landfill. "It should be fenced off and children and adults should be kept out of there. It's a dangerous area."

Gibbs points to the Monument Street municipal garbage dump in Baltimore, Maryland, which had been slated for conversion to a park. State officials acting on a tip-off from a bulldozer operator at the site, caught a waste disposal company illegally dumping drums of toxic chemicals, including oil and benzene. Over 1000 drums may have been buried on the site, most likely with full knowledge of some city officials operating the dump. Because of the considerable controversy generated by the incident, and enormous community opposition, plans to convert the landfill to a park have now been abandoned.

Even with the increasing number of recent regulations governing disposal of toxic chemicals, local municipal garbage dumps remain choice spots for dumping of hazardous wastes by unscrupulous dumpers. At most dumps, there is little or no checking of what is actually dumped. This provides ways for industries trying to avoid the escalating costs of disposal in officially designated hazardous waste disposal sites. The problem is complicated by the increasing number of hazardous waste sites which have been shut down in recent years. For example, by the end of the year, there will be only one hazardous waste disposal site in the entire state of Maryland. "Nobody wants a hazardous waste site in their community," says John Curren, an assistant to Maryland Governor Harry Hughes. The net result is that small amounts of toxic substances may end up in ordinary garbage dumps, as the cheapest and most convenient way to dispose of them.

Nor is the situation helped by the large loopholes in the federal Resource Conservation and Recovery Act of 1976 (RCRA). The law exempts "small" hazardous waste disposers from all regulations; these disposers in effect are allowed to dump up to one ton of hazardous wastes per month in regular landfills. It is not surprising therefore that 92% of all hazardous wastes

dumped in the U. S. are exempt from RCRA regulations. Recognizing the obvious loopholes, some 20 states have passed more stringent regulations, but it is obvious that existing regulations do not sufficiently regulate the amounts of toxic wastes going into ordinary landfills in most states.

Unless regular garbage dumps are regulated more strictly, they may become equally as unpopular as those handling hazardous wastes. In Los Angeles, 42 garbage collectors suffered "serious injuries" in a single year due to exposure to acid and fumes in household trash. City officials pointed to homeowners who routinely use their trash cans to get rid of pool chemicals, battery acids, and waste oil as the culprits. These substances then found their way into the city's "safe" garbage dumps. "I would bet you that 75% of our garbage dumps across America contain hazardous wastes and are leaking those wastes into the community," says Lois Gibbs.

Placing playgrounds on top of landfills is not the only example of unwise design decisions that may affect children's health adversely. With declining budgets, few communities have sufficient funds to purchase open spaces for recreation areas at market prices. So the temptation is to look for those sites that can be acquired cheaply or that no one else wants.

Many cities around the country suffer from the familiar cycle of industry abandoning urban areas for cheaper and more spacious suburban environments. Left behind are decaying plants, many of which had been used as dumping grounds for dangerous chemicals.

These plants are often situated directly next to low income housing projects which suffer from lack of adequate recreation facilities. The abandoned plants would make perfect locations for new parks were it not for the possible presence of toxic chemicals. To make matters worse, records of chemical dumping in these areas are usually sketchy or non-existent.

In 1978, for example, the City of Oakland proposed building the Verdes Carter Park in a low income area of the city. Neighborhood residents, including public health nurse Joan Rahman, knew that a battery factory had occupied the site until 1974, and asked the county Health Department to test the soil for hazardous wastes. Extremely high levels of lead were discovered in the soil, and the city was forced to remove tons of poisoned soil before going ahead with construction of the park.

In spite of the considerable publicity generated by this incident, the city bureaucracy were unable to prevent a similar situation occurring again. Less than two years later,

Rahman was riding an elevated BART car through another economically depressed area of Oakland. She noticed a pile of white chemicals on the site of the abandoned Pacific Oxygen Plant, which had once manufactured acetylene gas. When she contacted city officials, she found that the city had acquired the plant three years previously and was planning to turn it into a park for the children in the neighboring low-income housing project.

Testing of the chemicals revealed the presence of caustic and potentially hazardous hydroxide compounds, as well as mercury and cadmium in the soil. Once again, the city was forced to remove tons of soil and modify its construction plans.

The Oakland experience is not atypical. Very few local governments routinely do a detailed review of prior use or test for toxic chemicals for a site under consideration for a park or playground. In Los Angeles, for example, the Veterans Administration hospital turned over 12 acres of land in the prime Brentwood area for conversion to soccer fields and other recreational activities. Only after the city had signed a lease with the V.A. did it come to light that the site had been used by the V.A. to dump radioactive and other chemical wastes used in medical research and treatment over a period of two decades. The wastes included Carbon 14 and Tritium, and the suspected carcinogens Toluene and Dioxane.

The disclosure occurred as a result of probing, not by city officials, but by the Committee to Bridge the Gap, a local environmental group. The V.A., which knew about the dumping, did not inform the city about possible hazards, and insisted the site was safe. The city released an Environmental Impact Report which would allow construction of the park, in spite of criticisms of inadequate testing levelled by the Committee to Bridge the Gap and the environmentally-oriented Los Angeles Federation of Scientists.

Unless extensive testing is done beforehand, it makes little sense to build a children's playground on top of a garbage dump or near an abandoned industrial plant. Even with testing, it is often impossible to know what may have been dumped there before, and officials may therefore not know what to test for. In addition, the nature of the testing will almost certainly be subject to criticism, depending on the level of concern in a community.

"If there is a playground across the street, a child knows he has to watch out for cars to get there," says health official Gordon Coleman. "But if he goes across there, and there's toxic material in the ground which he's unaware of, and he gets exposed to it, whose fault is it?" Says Coleman: "If people are more responsible, particularly in the public sector, we'll solve a lot of our problems." Ultimately, though, Coleman says it's up to private citizens to "raise their voices when they get concerned. That's the bottom line: ask questions when you don't know."

Recommendations: Siting of Parks and Playgrounds

Policy Goal: To prevent exposure of children to hazardous chemicals in playgrounds

City and County Government:

1. Landfills, garbage dumps or abandoned industrial plant sites should only be considered when there are no other alternatives, and only when these sites have been subjected to extensive testing. If currently operating landfills have not been subjected to rigorous dumping controls, future use may have to be restricted to "passive" recreational or non-recreational uses.
2. New dumping regulations must be developed for landfills that may be used in the future as a park or playground. Programs must be created to help local residents dispose of small amounts of hazardous wastes safely, instead of using trash cans or landfills.
3. Local ordinances should be modified to require extensive review of records and previous land use of potential playground or park sites. If there is any suspicion of the presence of toxic chemicals, soil and water on the site should be monitored and thoroughly tested before construction is approved.
4. Collaboration between agencies responsible for park and playground construction (public works and parks departments, for example) and city or county health departments should be mandated in local ordinances. All plans for such construction should be approved by health departments before construction permits are issued.

State Government:

1. Statewide legislation should be introduced to require thorough review of records and previous land use of proposed park and playground sites, and testing of soils where appropriate.
2. Statewide legislation should be introduced to require stricter monitoring of municipal garbage dumps and landfills. Loopholes in the federal Resource Conservation and Recovery Act should be eliminated through state action.
3. A statewide program, organized by manageable regions, should be implemented to help local governments dispose of legally treat small quantities of hazardous wastes in secure and approved facilities. These services could be subsidized by major hazardous waste producing companies.

4. In addition to the above recommendations, states should encourage alternative methods of waste disposal.

"INNER CITY CANARIES": CHILDREN AND ABANDONED INDUSTRIAL PLANTS

Coal miners once took canaries with them into the mines to detect lethal methane gas. If the canaries died, the miners knew they had to get out immediately. Today, children playing in abandoned warehouses and industrial plants across America are unwittingly playing the role of "canaries" in the uncovering of highly toxic chemicals.

On a warm day in May, 1979, the slow moving liquid oozed out of the abandoned Independent Wire Company building, and into the streets of the Philadelphia suburb of Kensington. The neighborhood children were, as usual, playing around the building, which had stood vacant for about two years. The liquids leaking from the giant transformers used in the former electroplating business helped cool the children, who ran through the liquid, chasing their friends. Some were barefoot. Others made pies with the muddy soil that formed in the streets. According to observers, one two-year-old got some of the liquid in her mouth and had to be hospitalized for observation.

"I started sweeping it down the drain," says Mrs. Anna Franchi, a long-time resident of the area. Only when it became "goosey and gummy" was the fire department called in to wash the substance away. Because of its foul odor, the oily substance was tested -- and found to contain carcinogenic polychlorinated biphenyls or PCBs.

The area surrounding the plant was cordoned off by police, and sand bags were piled on sidewalks to prevent the 300 to 400 gallons of contaminated oil from spreading. At least 20 children were taken to St. Christopher's Hospital for blood testing. A city van drove around the neighborhood collecting contaminated clothes and sneakers. Because the PCBs had seeped into the ground, the streets in a four block area were dug up, and resurfaced. The building itself was demolished several months later by the city. Total cost of the clean up: \$160,000.

The demolition of the building eliminated one of the most popular playgrounds for neighborhood children. "Lots of kids went in there," recalls 11 year old Chuckie Fugarino, Mrs. Franchi's foster son, and one of those contaminated by the PCB-laced oil. "We used to play on the crane up there that used to move equipment around. Then we found the upstairs. It was great. There was a locked room, but we broke in and tore down the wall. There was kind of an office in there, a

safe, papers, and a desk. One of the kids started a fire in there. The kids tore the place up, took out the light fixtures, and the insulation in the walls," he says.

Mrs. Franchi laughs when asked if she was concerned about the children in the building. "When you live in Kensington, nothing is strange. Kids in Kensington are just bad, they're into everything."

Chuckie's older brother, Salvatore, recalls chasing a girl down the street through the contaminated oils, and tripping in the gummy substance. "My knees got all in it," he says. Ten-year-old Robert Heeney sneaked past police barriers even after the children were told to keep out of the area. "My friends had a secret way of sneaking back there," he says. "And I got it all over my pants and everything."

Robert's father, with ambivalent pride, describes Kensington as a "white ghetto". Tightly packed row houses face each other across narrow streets, which in the summer are filled with people and cars. It's a tough neighborhood. "The Hell's Angels wouldn't even dare come here," Heeney, Sr. says. "They'd get killed."

Three years later residents are still angry about how the PCB spill was handled. Mrs. Franchi is upset that the PCB waste had not been removed prior to the spill. Mrs. Elinor Clark, whose two sons were also exposed to the PCBs, says health officials never got back to her about the results of the blood tests on her children. She is still amazed at how the fire department hosed the PCB wastes into the sewage system before discovering what they were. "It was a joke," she says.

The fire department's lack of caution was particularly mystifying because the EPA had known for almost a year that the building housed electrical equipment containing PCBs that were not properly sealed. There was no follow-up until children were contaminated. It was only then that the owners were charged with violating federal laws regulating the storage of PCBs, and fined \$76,000 -- remaining clean-up costs came from an obscure federal fund target for oil spills, administered by the U. S. Coast Guard.

The Philadelphia children are cautious about the possible long term impact. "Well, it was right after that that I went into the hospital," says Heeney. His father, however, denies any connection. Salvatore Fugarino says, "I feel fine right now, but who knows, maybe later..." He adds, "I got a little worried when they started pulling up the street."

What happened in Kensington reveals a problem facing most urban communities across the country: how to protect children from abandoned industrial plants containing toxic chemicals. The problem is likely to get worse as the greatest

number of small businesses since the depression go bankrupt. "These businesses can't afford to dispose of these wastes," says Kenneth Bechly, EPA regional director in Chicago.

One building Bechly refers to is the abandoned Mertz Paint Company plant at 1638 Normal Street, just ten minutes from downtown Chicago. The building was abandoned by its owners who left as many as 100 drums of toxic chemicals, some with labels reading: "Warning: Highly Flammable." Between six inches and a foot of liquid chemicals had collected in the basement over the years. "Children went in and out of that building," conceded a city official. Some of the chemicals were removed after complaints from the Pilsen Housing and Business Association, a neighborhood organization. But scores of drums were left behind. It took a legal threat by the state attorney general's office to force the city to clean up the site.

An abandoned paint factory in San Francisco also provided a playground for children. The 100-year-old Dutch Boy paint factory lay vacant while waiting to be demolished to make room for condominium construction, but before construction began, tests revealed deposits of lead, zinc and PCBs in and around the plant. Children were known to play in an abandoned incinerator, which was found to have walls coated with asbestos, and was filled with asbestos-tainted soot. When neighborhood parents became concerned and began circulating flyers, the plant's owners finally put up a fence around the entire site, which managed to keep children out. "They should have done that in the first place," said a parent.

In the Ridgewood section of Brooklyn, New York, the Technical Metal Finishers plant provided a perfect clubhouse for neighborhood children when its owners abandoned the building after the city tried to collect back taxes. When a fire broke out over a year later, 12,000 cubic feet of chemicals in open vats were found in the building.

The city's Department of Environmental Protection sealed up the front door with concrete and blocked the back entrance with metal sheets and a chain link fence. But a visit months after the fire showed that the metal sheets had been torn down, and there were holes in the fence. Children still used the building as a clubhouse, in spite of charred timbers and the strong odor of chemicals. A mother who lives five doors down from the plant said, "They have enough money to do other things, they should demolish the building, and keep the kids out of there."

Warren Shalit, the manager of the Starr Carpet warehouse adjacent to the charred building, is critical of the city's handling of the problem. "Children from the school across the street are going to get killed in there, not only from the chemical wastes, but from the wooden structure," he predicts. "I would dare anyone to go into that wooden building."

It's more dangerous than a rollercoaster."

He also points in frustration to the inability of the city to identify abandoned buildings before they become hazardous. "As soon as the taxes aren't paid, they should take over the building," he argues. "I own a house in Brooklyn. I guarantee you that they would take over my house right away if my taxes aren't paid. To allow a business to owe \$30,000 is ridiculous."

Carey Weiss, the city's main toxics troubleshooter, says she knows of at least three known cases of children having contact with chemicals in abandoned buildings in recent years. She says it's virtually impossible to know whether the children's health has been affected. "They run away, so we don't know who they are," she says. Nor is it possible to pinpoint the actual number of cases of toxic exposure in abandoned buildings, because these incidents generally go unreported -- unless the children are immediately and directly affected.

Like most cities, New York does not routinely keep records of all industries generating or storing toxic wastes. So when a plant is abandoned, the city only finds out about them when fires break out, when officials show up to collect taxes -- or when children are exposed to chemicals. That process could take years.

To reduce the period that buildings are left abandoned, Weiss says her office consults trade association journals and Dun and Bradstreet records to keep track of plant closures. The City is also conducting its first inventory of 7,000 industries thought to be generating or storing toxic wastes. But it is an uphill struggle. "It's an impossible task to keep track of all plants that close down," says health official Dr. Edward Ferrand. "We have to rely on neighborhood groups, schools, and fire departments to keep us informed."

Other cities face even more formidable problems. In Philadelphia, approximately 11,500 plants use or manufacture toxic substances. In Los Angeles, the number is closer to 17,000. Other cities, like Chicago, don't even know how many toxic producing plants they have within their boundaries.

As a result of pressure from the Delaware Valley Toxics Coalition, the City of Philadelphia became the first city in the country to adopt community "right to know" legislation. The law requires industries to disclose publicly any chemicals they use, store, manufacture, or release into the atmosphere. The legislation was denounced by the Philadelphia Chamber of Commerce as the "greatest idiocy to come down the pike in quite a while," at the same time that Ralph Nader hailed it as "a model for municipalities around the country."

Nader's assessment seems to have been more accurate. "Right to Know" ordinances have been passed in Santa Monica, Vallejo, San Diego County, (all in California), and in Cincinnati. A statewide law was enacted in Connecticut. The legislation will at least help local officials more easily identify chemicals in abandoned facilities once they have been discovered. But it will do little to uncover plants that have already been abandoned, and then used as clubhouses by neighborhood children.

Some activists contend that community "right to know" legislation is just a modest first step which does not necessarily alert people to toxic hazards in their neighborhoods. Residents must still demand or actively seek out information once it has been filed with the appropriate government agency. Lee Webb of the Conference on Alternative State and Local Policies suggests that the next logical step for communities would be to adopt "duty to warn" legislation which would force plant managers to notify nearby residents about hazardous materials. In this way, parents would be more likely to keep children out of dangerous buildings, and to call local authorities when they are abandoned.

California is one of the few states which has moved aggressively to identify abandoned plants. The Abandoned Site Project is searching for sites where toxic chemicals may have been stored or dumped over a period of three decades -- long before the state began regulating hazardous waste disposal in the early 1970's. By the time the project is completed over 100 hazardous sites requiring clean-up will have been identified throughout the state. Of those sites identified so far, at least half are close to residential areas.

Some of the clean up costs will be paid for by the EPA's Superfund. Other costs will be met by California's own Superfund. Both sources of funding will not be adequate to undertake the enormously expensive task of cleaning up hazardous waste sites. But California and 27 other states are more fortunate than the remaining states which do not have a continuous and established fund to clean up waste sites. These states have to rely on separate legislative action to provide matching funds for each site or incident in order to receive any money from the federal Superfund. Getting state legislative approval can be a lengthy and tedious process. But even when state funds are available, that is no guarantee that federal Superfunds will be forthcoming. As recent testimony in Congress has revealed, the federal Superfund has been plagued by bureaucratic delays and political manipulation. Of the 14,000 known hazardous waste sites in the U. S., only five have been completely cleaned up using Superfund monies, although work is proceeding at other sites.

Most abandoned plants are in low-income, mixed residential-industrial inner city areas. The deteriorating buildings are

testimonies to a declining economy, changing technologies, and the flight of industry from the inner city. Few public officials live in such neighborhoods, which may account for the generally weak effort most local governments have made to identify potentially hazardous sites. For the children, exposure to toxic chemicals is just one aspect of a disabling environment which includes poor nutrition, poor housing, and poor schools.

Guillermo Gomez is the community organizer who first alerted Chicago officials to the dangerous chemicals in the abandoned Mertz building. He is convinced the reason the city was spurred into action was not out of concern for local residents, but because of the potential danger to downtown Chicago.

"The danger we face until the chemicals are removed is far greater than anyone can anticipate," he says. "Governments only work when there's a crisis. Luckily we haven't reached that point yet."

Recommendations: Abandoned Industrial Plants

Policy Goal: To prevent exposure of children to toxic chemicals in abandoned industrial plants.

City and County Government:

1. Fire departments should be required to report the possible presence of toxic chemicals in abandoned buildings to health departments for immediate inspection.
2. When potentially hazardous chemicals are detected, abandoned sites should be sealed off, and signs posted warning local residents, and especially children, to stay away. Periodic inspections (at least monthly) should be made to assure that the site remains secured.
3. City and county wide task forces should be created involving fire departments, public works or sanitation departments, health departments, and law enforcement agencies to coordinate identification and clean-up of abandoned sites.
4. Trade association journals and Dun and Bradstreet records should be monitored continuously, in order to identify and inspect plants as soon as possible after they shut down. In addition, plants using, producing, or storing toxic substances should be inspected within two months of tax delinquency.
5. A public education program should be implemented to educate local citizens about possible hazards in abandoned plants, and to encourage them to report these plants to the appropriate authorities immediately.
6. City and county governments should pass "community right to know" legislation to reduce future possibilities of exposure to children.
7. Policies allowing industrial plants to be built close to residential areas, schools, and playgrounds should be reexamined. Such construction should be discouraged or prohibited.

State Government:

1. City and county health departments should be required to report potentially hazardous abandoned plants to state health departments to ensure more accurate record keeping and more immediate mobilization of state resources.

2. A statewide program to identify abandoned sites in major urban areas should be established, along the lines of California's Abandoned Site Project.

3. Existing state legislation should be modified where appropriate to require posting of warning signs and sealing of abandoned plants containing toxic chemicals.

4. Statewide community "right to know" legislation should be instigated.

PLAYING WITH PESTICIDES

When Khadja Abdullah-Ali's 19-month-old son put pebbles in his mouth at San Francisco's Du Boce Park, she did not know that the park had recently been sprayed with 2,4-D, a component of the controversial defoliant Agent Orange used in Vietnam. For three days afterwards, her son refused to eat, and the milk he drank came up through his nose. He became fussy and irritable, and hardly slept.

Abdullah-Ali was convinced that her son became sick as a result of exposure to 2,4-D. The incident led to a ban on the chemical in San Francisco city parks.

This scenario, with variations, has been played out in communities throughout the U.S., leading to a growing concern about pesticide use in parks and playgrounds. Children, who are most susceptible to pesticide exposure, have been at the receiving end of widespread and often careless use of pesticides in publicly owned recreation areas.

In California alone, at least 40 million pounds of pesticides find their way into the urban landscape every year.¹ According to a report by Citizens for a Better Environment, urban areas are more saturated with pesticides than agricultural land. While exact figures are difficult to come by, it is estimated, for example, that in California, an average of between five and fifteen pounds of pesticides per acre are dumped on urban areas, at a rate several times higher than agricultural land -- this in a state with the highest agricultural use of pesticides in the nation.² Each year, over 100,000 Americans suffer from pesticide poisoning.³ Many of those are children. While the greatest hazards come from pesticides in the home, children have also been affected by the virtually unsupervised use of pesticides by public agencies in schools, parks, and playgrounds.

By far the most controversial pesticide in parks and playgrounds has been 2,4-D. Case after case of children being exposed to 2,4-D in urban settings have been reported. Animal studies suggest that the pesticide is a mutagen; and is also suspected of causing birth defects in children born in logging country on Oregon where the substance is widely used.

° In Arcata, California, a small town 300 miles north of San Francisco, parents complained that their children became violently nauseous after the school district sprayed 2,4-D on school lawns and playing fields in May, 1982. Only after parent protests did the school district rope off the sprayed areas

and put up warning signs. School officials have now banned the chemical's use altogether.

° A year earlier in the community of Turner Valley in Ontario, Canada, 34 children were hospitalized when 2,4-D was sprayed in the school grounds just before children were let out to play for the noon recess. Dow Canada, the maker of the pesticide, said the children's symptoms (nausea, stomach cramps, and a "sense of walking on legs that weren't there") were the result of a "mass psychosomatic reaction." This phenomenon, Dow explained carefully, was "related to a form of mass hysteria known to occur in groups of young children."

° In Vallejo, California, Herb and Patsy Shrum say they and their three children were exposed to 2,4-D when a pesticide agency contracted by the city sprayed a mixture of pesticide on an empty lot next to their house to clear away overgrown weeds. Their children unknowingly walked through the contaminated lot repeatedly on their way to a nearby park. Soon afterwards, the entire family came down with a variety of disturbing symptoms, including nosebleeds, dizziness, fatigue and back and headaches. Their doctor recommended they move out of their house into a rented apartment. Two months later they moved back in -- but only after the house had been washed down, the rugs shampooed and the drapes cleaned. Says Patsy Shrum: "I have no doubt that the pesticide is deadly. They shouldn't spray it around parks, children and animals."

As a result of the Shrum's experience -- and a lawsuit -- the city of Vallejo has stopped using 2,4-D. Like other communities they have replaced it with Roundup, which is far more expensive, but thought to be less toxic.

In spite of doubts about 2,4-D's "safety", it is widely used by park districts around the country. But the safety of its replacement, Roundup, is also coming into question. Roundup is one of 207 pesticides being reevaluated by the EPA because some of the original studies documenting their toxicity may be invalid. Other widely used pesticides which have been banned in a growing number of communities as a result of citizen protests include Malathion, used for controlling mosquitoes and other purposes, and Sevin-4 or Carbaryl, used to combat Gypsy Moth infestation.

Part of the problem is that the public has been led to believe that just because the EPA has approved or "registered" a product, it is safe. This is not the case. A 1981 General Accounting Office report, for example, concluded that the EPA has "in fact been negligent in its public duty by not reviewing all data in depth prior to registration." The report also criticized the registration process itself. EPA registration, it said, "is proceeding too slowly and the public may be exposed to hazardous pesticides longer than is necessary."⁴

The problem is compounded by the seemingly irrational system of pesticide classification. The EPA puts pesticides into two classes: "restricted" or "unrestricted." Only 44 out of the approximately 1200 active ingredients in pesticides have been placed on the "restricted" list. To the EPA, "restricted" seems to be synonymous with "known to be dangerous." Yet, restricted pesticides are widely available and widely used, even though the EPA lists them as substances with the ability to "cause human injury or environmental damage even when used as directed on the label" (emphasis added).⁵

Some chemicals, like DBCP, have moved almost overnight from the "unrestricted" list to being banned altogether (or, in EPA terminology, "cancelled"). The latest EPA change of heart was the cancellation in December, 1982 of Toxaphene, one of the most extensively used agricultural pesticides. Even "cancelling" a pesticide doesn't necessarily outlaw its use, because the EPA has the power to grant exemptions.

It is within this context that local municipalities apply pesticides in parks and playgrounds. Pesticides are usually applied in these areas for aesthetic reasons, primarily to keep weeds under control. As budgets for local governments shrink in many states, the use of herbicides may actually be increasing, in spite of growing citizen discontent. Killing weeds with herbicides is cheaper than paying city workers to do the same job by hand. A survey for the California Department of Food and Agriculture after the passage of Proposition 13 found that "herbicides are now seen as less costly than physical methods of weed control for the maintenance of large areas of land," and that the percentage of herbicide use relative to other pesticides was increasing among local governments.⁶

Because the health effects are delayed, and because parents and children usually do not know when or if pesticides have been sprayed, it is quite difficult to pinpoint pesticide exposure in parks and playgrounds. Cases of acute poisoning in the home are relatively easy to identify, which may account for some of the lack of concern for outdoor pesticide exposure.

"A lot of illnesses are not traced to their proper source," says toxicologist Dr. Ruth Shearer. "Most people do not know what makes them sick." Some of the reactions to Malathion, for example, range from headaches, nausea and fatigue to allergic reactions. Children who are most susceptible might display these not unusual symptoms several hours after exposure, but parents are unlikely to link the symptoms with their cause.

Another complicating factor is that it is difficult to know how long a pesticide is dangerous after it is sprayed, and how long it takes to degrade to "safe" levels. Much depends on the type and concentration of the substance,

weather and soil conditions, and other factors. A 1980 EPA review concluded that 2,4-D might be dangerous for two to three weeks after spraying. Yet children are invariably allowed to go into parks immediately after spraying. Often they walk around with barefeet, guaranteeing direct exposure to the newly sprayed pesticide. "Children play on the ground and run under the shrubs," say Dr. Shearer, pointing to the unique play habits of children which place them at greater risk than adults. Shearer says she knows of cases of people getting sick after being exposed to 2,4-D sprayed a week earlier. Her advice: 2,4-D should not be used at all if there is a possibility of human contact.

In spite of post-spraying dangers, only a handful of the communities surveyed for this report place signs in parks warning parents and children of possible exposure.* In almost every community, pesticide crews simply spray, and then leave, without regard to how long a pesticide may be dangerous.

How long a pesticide remains toxic has received considerable attention in agricultural settings, but none in urban areas. The EPA has set "re-entry" levels for adult farmworkers -- time periods after which it is presumed to be safe to return to the fields. When in 1977 changes in child labor laws were proposed to allow 10 and 11 year olds to work in the fields, Congress instructed the Department of Labor to come up with new re-entry times for children. Congress recognized that the existing re-entry levels established with an "average" adult male weighing 132 lbs. in mind, should not apply to children. Clement Associates, the scientific consulting firm hired to recommend new re-entry times, concluded that the information necessary to protect children from pesticides does not exist. Clement pointed to huge gaps in the literature such as insufficient laboratory tests on preadolescent animals, inadequate child related skin absorption data, and few studies on exposure and work practices of children.

In light of the failure to establish adequate "re-entry" levels for farmworker children, it is no wonder that local governments using pesticides in parks have paid little or no attention to post-spraying hazards. But they have also chosen to ignore the "re-entry" levels for adults, which presumably would be better than no controls at all.

Most local officials say they follow all state and federal regulations when applying pesticides in parks. That may not be sufficient. In one of the few in-depth studies of pesticide use, Citizens for a Better Environment researched pesticide applications by local governments in the San Francisco-Bay Area. Alameda County regulates pesticide

*Communities known to have regulations requiring posting of signs are Berkeley and Salinas, CA.

use more tightly than almost anywhere in the country. Yet in 1979, 80% of all agencies using pesticides were found to be in violation of state laws at least once during the year. "Inspections most commonly revealed a lack of employee training, improper storage, rinses or disposal of pesticides, and a lack of safe or proper equipment,"⁷ the report concluded. These findings provide little reassurance that other less environmentally aware municipalities are any more attentive to pesticide regulations.

One of the obstacles to ensuring greater public safety is the widespread practice of contracting out pesticide spraying to private firms. Local governments usually have little knowledge of -- or control over -- what gets sprayed.

Drexel University in Philadelphia, for example, contracts with Chemlawn, one of the largest chemical application firms in the country. With a single mixture of chemicals, the firm will take care of all "maintenance" problems. Deborah Baskin a graduate student who lives directly across the street from the university became concerned when a Chemlawn truck showed up without warning and began spraying her neighborhood in the spring of 1982. She says she felt "sticky stuff" on her skin from the spray which drifted across the street into her and her neighbors' yards. Most of the residents thought the chemical spray was dew, and it is common to see students lying on the grass immediately after the Chemlawn applications.

The university had no idea what was being sprayed, and remained unconcerned in spite of Baskin's protests. City officials said the spraying was legal. Baskin managed to get 40 of her neighbors to sign a petition protesting the frequent spraying. But her protests had no results. "The neighborhood isn't interested in taking this on," she says. "People recognize that it's dangerous, but they say: 'What are we going to do? It's legal'. They feel powerless." Rather than risk further exposure, Baskin said she planned to move out of the neighborhood once she has completed her dissertation.

In the Chicago area, the Clark Outdoor Company, another private pesticide applicator, has the monopoly on the spraying of Malathion to control mosquitoes. A frequent subcontractor for local governments, the firm presents effective promotional materials on the dangers of encephalitis, which could be spread by mosquitoes. Even though there has been no reported case of encephalitis in the Chicago area since 1975, the spraying continues.

Also ignored is the relative ineffectiveness of Malathion in killing off mosquitoes for more than a short period of time. Dr. Robert Ginsburg, research director for the Citizens for a Better Environment in Chicago, says that 50% of all mosquitoes come from people's backyards, and much of the mosquito "problem" could be eliminated or reduced with simple preventive measures. Eliminating breeding grounds of stagnant

water in backyard pools, lawn furniture, and old tires, as well as putting up window screens, could eliminate much of the mosquito inconvenience. If spraying is necessary, Citizens for a Better Environment says residents should get 48 hours notice, children's toys should be kept indoors, and play areas and outside furniture washed off afterwards. Other specialists recommend the use of a harmless but effective bacteria, *Bacillus Thuriengis Israeliensis*, as an alternative to Malathion.

With better planning and design, experts say aesthetic and other problems posed by weeds in parks and playgrounds could be handled with fewer or no pesticides. Sheila Daar of the Center for Integration of Applied Sciences (also known as the John Muir Institute) recommends for example the selection of rapidly growing plants that fill up a habitat that would otherwise be taken over by weeds. Parks should also be designed to make hand mowing or weeding more feasible along fence lines, one of the most frequent targets of pesticides in parks.

"People design parks requiring high levels of maintenance and manicuring," says Daar. Too often, she says, plants are selected for their aesthetic value alone, and not also for their resistance to disease or pests.

Another common mistake is using plants not ecologically suited to the surrounding area. Daar cites two examples. She says it makes no sense to plant Kentucky Bluegrass in many areas of California. The species grows well on the East Coast with its summer rains, but California's dry summers put the grass under stress, making it susceptible to insect attack. On the East Coast, the District of Columbia's famous cherry trees are not suited to the district's high water table. The trees' roots are weakened by the wet soil, and in turn expose the tree to attack by insect pests. Until Daar's agency suggested planting the trees in a slightly elevated soil mound, the trees had to be sprayed between three and six times during the spring season alone.

Daar also says it is a mistake to plant a single variety of vegetation ("mono-cultures") because if a pest attacks it, the entire area could be killed off. By mixing different species, with different resistances to pests, plant life can be maintained without automatic use of pesticides. The "mono-culture" approach was responsible for millions of elm trees being planted throughout the country. When the trees were struck by Dutch Elm disease, large parts of the urban landscape were left without vegetation. The disease also promoted increasingly intensive use of pesticides in a desperate but ineffective effort to save the trees. If other trees had been planted alongside the elm originally, the disease could have run its course without the total loss of urban greenery.

Daar and her colleagues have been promoting these seemingly simple design decisions in communities around the country. The organization has played a pioneering role in promoting alternatives to pesticides in parks and playgrounds. It worked with the city of Berkeley to develop the first comprehensive municipal pesticide policy in the country. The policy established safety and other criteria for pesticide use, resulting in the ban of six out of eleven pesticides previously used by the city. The new rules also require posting of signs five days before spraying.

Berkeley's pesticide policy is the culmination of a long series of studies initiated when a city resident blamed poor health and a miscarriage on pesticide spraying of the city's lawn bowling green. Concern about pesticides is not however, limited to small communities like Berkeley. The use of herbicides has been reduced or eliminated in Central Park in New York City and in the National Capitol Region in the considerable parkland around the Capitol in Washington, DC.

But these are isolated examples of a slowly changing consciousness about pesticide use in public places. Because there are no "dead bodies" to point to, there is generally little concern among park officials about pesticide dangers to children. Yet pesticide exposure in parks adds to the overall burden of toxic substances affecting children and adults. Local governments must develop alternatives to pesticides, and protect children from some of the most hazardous substances in the 20th century environment.

Recommendations: Pesticide Use in Parks and Playgrounds

Policy Goal: To prevent exposure of children to hazardous pesticides in parks and playgrounds.

City and County Government:

1. Pesticide use in parks and playground facilities used by older children should be reduced or eliminated, especially when such spraying is primarily for aesthetic reasons.
2. No pesticides should be used in toddler parks or other play areas used by infants.
3. When pesticides are used, warning signs must be posted to keep children and adults out of parks during spraying. Signs should be posted several days before spraying, as well as after spraying during the period when the pesticide may still pose a health hazard.
4. Greater control must be asserted over pesticide applicators who subcontract with local governments. This would include:
 - a. advance notification to appropriate public agencies of what is to be sprayed;
 - b. notification of residents in areas to be sprayed;
 - c. restricting spraying to early morning hours before children are on the streets.
5. Volunteer neighborhood work teams should be encouraged to eliminate weeds by hand in place of pesticides.
6. A comprehensive integrated pest management program should be developed, and incorporated in local ordinances.
7. Park and playground design must be improved to minimize pesticide use. This would include:
 - a. more careful selection of plants to include disease resistant species;
 - b. avoiding the use of single varieties of plant, i.e. monocultures;
 - c. designing parks to facilitate weeding by hand or machine.
8. Accurate reporting of pesticide spraying by city and county agencies as well as schools and universities must be required, and the number of inspections of public agencies using pesticides must be increased to at least once a year.
9. Local governments should prohibit aerial spraying and general "fogging" in urban areas.

State Government:

1. Greater statewide restrictions should be placed on pesticide use. Public agencies should be required to monitor and report on the type, quantity, and location of pesticide applications.
2. All pesticide applicators should be certified according to statewide standards. Certification should include those actually applying pesticides, and should not be limited to supervisors.
3. Posting of signs prior to pesticide spraying should be mandated by state law.
4. State governments should develop guidelines to help local governments improve park and playground design along the lines outlined in recommendation #7 above. This could be undertaken in conjunction with university landscape design and architecture departments.

Notes:

1. Report on the Environmental Assessment of Pesticide Regulatory Programs. California Department of Food and Agriculture, 1978.
2. Publicly Administered Pest Control Regulations and their Regulation in Alameda County, by Steve Dreistadt. Citizens for a Better Environment, San Francisco, 1981. Figures on urban pesticide use drawn from R. von Rumker et al, The Use of Pesticides in Suburban Homes and Gardens and their Impact on the Aquatic Environment. EPA Office of Water Programs, Applied Technology Division, Rural Waste Branch, 1972.
3. National Household Pesticide Usage Study, 1976-77, U.S. EPA, July 1980, EPA 540/9-80-002.
4. "Delays and Unresolved Issues Plague New Pesticide Protection Program," U.S. General Accounting Office, Feb. 15, 1980, CED-80-32.
5. Apply Pesticides Correctly, A Guide for Commercial Applicators, U.S. Department of Agriculture and U.S. EPA, 1978.
6. Urban Integrated Pest Management in California: An Assessment and Action Plan, by William Olkowski, Helga Olkowski and Linda Laub. John Muir Institute, prepared for California Department of Agriculture, June 1980.
7. Publicly Administered Pest Control Programs and their Regulation in Alameda County, op. cit.

LEAD IN FREEWAY PARKS

The interchange in the Grove-Shafter Freeway in Oakland, California is an impressive piece of engineering, with its matrix of soaring on- and off-ramps. Under the freeway, the city built a series of freeway parks in what would otherwise have been unused and unattractive open space.

The parks, on the surface, are pleasantly landscaped with grass, trees and shrubs. But they contain a hidden hazard: lead deposits from freeway exhaust.

It was only when the county's federally-funded Lead Prevention Project did testing in the parks that the extent of the problem first came to light. In the soil and on the picnic tables were lead levels as high as 9,500 parts per million -- over nine times the "safe" level of lead in soil.

These startling findings required significant changes in the design of the parks. Picnic tables were removed. Children from the neighboring elementary school who played regularly in the park during recess were told not to use the park any longer. "They put in a little walkway and a few receptacles," says Gordon Coleman, the health officer in charge of the testing. "It's the kind of place where you can sit and read -- not play and eat."

Much of the traffic in and out of Chicago passes through the bedroom community of Morton Grove, better known for its pioneering hand gun control legislation than for its efforts to control the exhaust fumes from the 100,000 or so cars that use nearby freeways every day. Six years ago the Morton Grove Board of Trustees commissioned the Illinois Institute of Environmental Quality to look at the possible impact of lead deposits in air and soil near freeways on children -- the only municipality to have officially commissioned such a study.¹

Researchers found extremely high lead levels in the air and soil near freeways running through the town. They also found elevated blood lead levels in children living near the freeway. The study concluded that "airborne lead from automobiles using heavily travelled roadways may contribute to the blood lead levels of children, especially to that of pre-school children." Among the report's unconvincing recommendations: putting up baffles such as trees to deflect some of the lead, and educating parents "so that they understand the importance of keeping non-food items out of their children's mouths and for frequent and thorough handwashing."

In spite of the Oakland and Morton Grove findings, public officials in urban areas across the country express little or no concern about the possible presence of lead in freeway parks. There has been virtually no systematic testing of soils in outdoor areas where children play.

An exception is in New York City, where six years ago Dr. Anita Curran, then with the city health department, did a study of lead levels in city parks. What she came up with closely resembled the Oakland results.

"We found when playgrounds were near a major thoroughfare there were higher lead levels," Curran said. Several parks had lead levels higher than 1,000 parts per million. What concerned Curran especially was the possibility of small children with sticky or wet hands picking up soil, and then putting their hands in their mouths. In a "worst case" scenario, Curran and her researchers dipped lollipops in sand lots, and found that children licking the lollipop would ingest 90 micrograms of lead, an amount much higher than the established "safe" levels.

Remarkably, Curran's report was never released. The results were never written up, and she moved to another job in neighboring Westchester County.

New York City now has no official policy regarding construction of playgrounds near or under freeways. Although the park official in charge of construction admitted that freeway parks are "generally vile places to be," he expressed no concern about the possibility of lead deposits.

In Los Angeles, park officials acknowledged that there might be a problem in "one or two" parks in Chicano areas of East Los Angeles where high lead levels were found. Yet no precautions have been taken to keep children out of these parks, nor to warn parents of possible dangers.

The furthest Los Angeles has gone -- which is further than most other major cities -- is to adopt a policy barring construction of more facilities in freeway parks, and also not to encourage "active" sports and activities there.

A reason for this modest first step may lie in a study conducted several years ago in Los Angeles which showed that young people playing basketball in courts under freeways have below-normal oxygen levels in their blood due to carbon monoxide emissions.

The lack of concern among city planners is due to the general agreement among experts that the major cause of lead poisoning in children is lead based paint. The Consumer Product Safety Commission banned lead levels of over 600 parts per million in paint in 1977. But extremely high levels

1

of lead have been gradually phased out by manufacturers since the 1940's. With greater awareness and the declining stock of older housing, fewer children have been exposed to lead from this source. A variety of other preventive measures have also contributed to lower blood lead levels in children -- including lowering of lead in gasoline, removing lead compounds in pesticides, modifying of food cans with lead soldered seams, and control of lead emissions in industry.

But in spite of these efforts, large numbers of children in the U.S. still have blood levels higher than the existing -- and probably inadequate -- standard of 30 micrograms per deciliter established by the Centers for Disease Control. The latest statistics, released in May, 1982, by the Department of Health and Human Services (HANES II), show that one out of twenty, or a total of 675,000 children between the ages of 6 months and 5 years have blood lead levels above the standard. The data for black children is even more chilling: one out of eight of all black children, and one out of five black children living in cities have elevated blood lead levels.²

Lead hazards in freeway parks and playgrounds have to be balanced against lead ingestion from other sources. But the scientific literature provides convincing evidence that huge amounts of lead are deposited in soil near freeways in sufficient quantity to harm children who come into contact with it. "You won't go to a picnic at a freeway park and get lead poisoning," said Dr. Quentin Young, former chairman of the Department of Occupational Medicine at Cook County Hospital in Chicago. "But the risk of lead poisoning is significant if you are continually exposed to the air in these parks, if you or your children use the park regularly."

Each year hundreds of thousands of tons of lead are emitted into the atmosphere from various sources. Over 90% comes from cars. In California alone, 97% of the 13,500 tons of lead in the atmosphere comes from automobile emissions. In Los Angeles, 18 tons of lead a day are spewed into the environment. Over half of the lead -- 57% -- is deposited on freeways or on the streets next to them. After taking hundreds of soil samples throughout the state, the California Childhood Lead Program concluded that "there is no doubt that urban California soil is sufficiently contaminated with lead to pose a potential hazard to many children." One example: of 114 soil samples taken in elementary schools, 26 were found to have lead levels over 1,000 parts per million. Researchers speculate the elevated lead levels may have come from lead deposited on school roofs from passing cars, and then washed down by rain into the school yards.³

As with other substances, children are uniquely susceptible to lead in the environment. The Morton Grove and other studies clearly demonstrate that children who breathe air with elevated lead levels will have higher lead levels in

their blood. The Department of Health and Human Services' study of lead levels of children in the U.S. shows that because of higher metabolic rates and greater physical activity, children will inhale two to three times as much airborne lead as adults do. A related problem according to a 1974 Dartmouth Medical School study is that the closer one gets to the ground, the greater the concentration of lead in air. The study found twice as much lead in the air within four feet of the ground than above it.⁴

But the major hazard to children in freeway parks comes not from air, but from the soil. Lead has been found in soil near a sufficient number of freeways around the country that it must be assumed that it poses a danger to children who play near freeways.

How much of a danger? In the vernacular of health professionals, a lead poisoned child is one who has a blood lead level greater than 80 ug/dl (micrograms per deciliter). A lead burdened child is one with a lead level of over 30 micrograms. However, the standard for what is regarded as harmful to a child has been steadily lowered over the years. The Centers for Disease Control, the federal agency responsible for setting the official standards, first defined hazardous levels of blood lead as 60 micrograms; that level was then lowered to 40 micrograms. Six years ago, the "safe" level was reduced to 30 micrograms.

Yet almost immediately after the current standard was introduced, it was challenged by a widely publicized -- and controversial -- study by Dr. Herbert Needleman and his colleagues at Harvard Medical School. Rather than looking at actual physical symptoms of lead poisoning, Needleman, now at the Children's Hospital of Pittsburgh, looked at performance on intelligence tests, behavior in the classroom, and reports from teachers and parents. Instead of only looking at blood lead levels, he also looked at lead levels in teeth, a much more sensitive indicator. Needleman found that even children with relatively low blood lead levels did worse on intelligence tests and also displayed a wide range of behavior problems that "interfered with classroom performance."⁵ Needleman's study strongly suggests that the CDC standard of 30 micrograms is too high. Yet the CDC continues to hold to its 30 microgram standard.

Other studies since Needleman's have confirmed his findings. They indicate that it is not sufficient to look only for acute symptoms of lead poisoning, such as stomach aches, headaches, hyperactivity, falling asleep at inappropriate times, vomiting, diarrhea, and so on. The preponderance of research findings suggest there should be a greater concern for low level lead exposure as well.

A 1982 Wall Street Journal editorial pontificated that "we are not inclined to believe that a few old cars driving down the streets of ghettos are poisoning the children who live there."⁶ But the problem is far more serious than simply a "few old cars." Even with the present level of knowledge, Dr. Lucille Saloom of the California Department of Health, after an extensive review of the literature, concludes: "Neurochemical studies do not indicate the existence of any 'safe' level of lead exposure." She also points to newer studies suggesting that lead is a carcinogen.⁷ In short, if the trend of present research continues, it is possible that it will eventually be shown that no blood lead levels are safe.

The controversy surrounding the "safe" blood lead standard also raises questions about the "safe" levels of lead in soil. The medical community and local governments generally consider soil with 1,000 parts per million or more of lead as potentially hazardous. Yet a 1977 EPA review of the literature concluded that levels of lead in soil far lower than the accepted standard contribute to lead in the bloodstream. The EPA review suggests that soil lead levels of over 500 parts per million should be cause for concern.⁸

While much of lead in exhaust fumes is blown away into the atmosphere, and lead in paint can be gradually eliminated as old housing stock get replaced, lead from cars accumulates for decades on soil adjacent to freeways. Nor does it vanish after a good rainfall. The California Childhood Lead Program concluded that "once soil is contaminated from lead, it may take hundreds of thousands of years for the lead to be removed by nature." For example, in the unlikely event that cars were banned from the Los Angeles freeways beginning tomorrow, it would take 100 years to erode one centimeter of soil, if the soil was flat, bare, and absorbed water quickly. For clay soil with vegetation, it would take much longer: an estimated 37,000 years.⁹

Lead levels in soil will vary according to where the freeway is situated, wind direction, type of soil, amount of vegetation, type of surface covering, volume of traffic, and so on. But because the evidence of possible hazards is so incontrovertible, a new public policy regarding the use of public space near freeways is needed.

These spaces should in the future only be used for parking lots, storage or warehouse space, or other uses which will keep human exposure to a minimum. In addition, the safety of all urban playgrounds exposed to large amounts of automobile traffic needs to be reviewed, including those in downtown and inner city areas.

Local governments cannot easily control the number of cars on a freeway, nor can they control the inevitable play habits of young children. What they can control is the open space under their jurisdiction that may be contributing to the unacceptably high levels of lead in too many of America's children.

Ira Berke, the landscape architect in the Chicago Parks Department, while denying that lead in freeway parks is a problem, admitted that evergreen trees do not grow very well, if at all, in those parks. "The fumes and soot from car exhausts close the pores of the leaves," he complained.

Environments where trees cannot survive are not the places where children should be expected to play, grow, and flourish.

Recommendations: Lead in Parks and Playgrounds Near Freeways

Policy Goal: To prevent exposure of children to lead from auto emissions in parks and playgrounds near freeways.

City and County Government:

1. Soil, sand lots, and picnic tables in playgrounds and parks within 100 yards of a freeway should be tested for lead contamination.
2. Signs should be posted in parks and playgrounds in the vicinity of freeways warning parents of possible hazards, urging them to make sure their children do not put their hands in their mouths, and to wash their children's hands after playing.
3. In parks and playgrounds with high lead levels, picnic tables and sand lots should be removed. Drainage systems should be installed when feasible to divert water run-off from freeways away from play areas.
4. Building codes should be modified to prohibit construction of playgrounds under freeways, to require testing of soils when planning playgrounds near freeways, and to incorporate recommendations 1 and 2 into existing code requirements.

State Government:

1. A statewide program should be implemented to test for lead in parks and playgrounds near freeways.
2. State building codes should be modified to discourage use of space near freeways as playgrounds, unless adequate safeguards are taken.
3. Where possible, new freeways should be constructed away from densely populated urban areas, and especially away from schools, and recreation and residential areas with a high percentage of young children.
4. A statewide fund should be established to help cities and counties decontaminate parks and playgrounds with high lead levels.

Notes:

1. Morton Grove Lead Study: An Investigation of the Contribution of Airborne Lead from Automobile Exhaust to Blood Lead Levels in Suburban Illinois. Illinois Institute for Environmental Quality, July 1977. Document No. 77/13.
2. Blood Lead Levels for Persons 6 months - 74 year of age, United States, 1976-1980. Advanced Data, No. 79, May 12, 1982, U. S. Dept. of Health and Human Services, Office of Health Research, Statistics and Technology.
3. Report on the Childhood Lead Project. California Dept. of Health, Sacramento, CA. June 1979.
4. Cited in Graham, Ada and Frank, "Lead Poisoning and the Suburban Child," Today's Health, March, 1974.
5. Needleman, Herbert, et al., "Deficits in psychologic and classroom performance of children with elevated dentine lead levels," New England Journal of Medicine, Vol. 127, 270-273, Sept., 1977
6. Wall Street Journal, August 27, 1982
7. Saloum, Lucille M., "Hazards of Lead in the Atmosphere," California Air Resources Board, Research Division, Toxic Substance Standards Section, May 10, 1982.
8. "Air Quality Criteria for Lead," Office of Research and Protection, U. S. EPA, Washington, DC, Dec. 1977 (EPA 600/8-77-017).
9. Report of the Childhood Lead Project. California Dept. of Health, Sacramento, CA. June, 1979

WOOD PRESERVATIVES IN PLAYGROUND EQUIPMENT

by Jonathan King and Maureen O'Neill*

Three years ago the abandoned Southern Pacific Railroad tracks in Berkeley, California, were pulled up to make way for the Cedar-Rose Park -- the fulfillment of a longtime dream of residents to provide more open space for their children. The park, now used by children of all ages, took the place of an unsightly and overgrown city tract. The park's most prominent features are its wooden play structures, surrounded by spacious lawns and quiet residential streets.

But the pleasant greenish tint of the wood betrays a hidden chemical danger. The green color indicates that the wood has been treated with copper arsenic combinations. Without the arsenic based preservatives, the wood might rot within a few years.

In 1982, the California Department of Health Services tested the playground equipment to determine the arsenic levels. The results were alarming. The levels of arsenic on the wood surfaces were as high as 280 micrograms per 100 square centimeters (280 ug/100 cm²). That concentration is more than 10 times the surface levels of 25 ug/100 cm² recommended by the Department of Health Services.**

The Cedar-Rose Park is not an isolated case. Wooden playground structures around the country are treated with arsenic-copper combinations as well as pentachlorophenol (PCP), another wood preservative. (Another preservative, creosote, is a suspected carcinogen, and is no longer extensively used in California on playground equipment, because it is acutely irritating to the skin).

The use of wood preservatives on playground equipment is virtually unregulated. Al Lindberg, of the U. S. Consumer Product Safety Commission in San Francisco said simply: "There are no regulations regarding chemicals on wood in playgrounds at the national, state or local levels."

*The authors work for the Children's and Environmental Regulations Project of the Center for Investigative Reporting in San Francisco.

** Neither the EPA nor OSHA has set maximum surface levels for arsenic-based preservatives.

California health officials became concerned about consumer exposure to arsenic wood preservatives in 1978 after several workers at the Monterey fishing pier became ill while working with arsenic-treated wood. Tests revealed arsenic concentrations of more than 2,500 ug/100 cm² on wood from the pier. Further testing in a park in Martinez, across the Bay from San Francisco, revealed even higher concentrations on wooden surfaces there. At the Hidden Valley Park playground, the surface arsenic levels ranged from 178 ug/100 cm² on a playground pole to a staggering 3,327 ug/100 cm² on a light pole.

The state's chief of laboratory services, Dr. John Heslep, became so concerned about the problem of children's exposure to arsenic in playgrounds that in 1979 he wrote to the EPA in Washington, DC. He told the EPA that the levels of arsenic at the Hidden Valley Park could "pose a serious hazard to small children who climb on and grasp these surfaces repeatedly and who characteristically put their fingers in their mouths."*

Heslep also pointed out that the acute effects of arsenic poisoning such as headaches, nausea, skin rashes, diarrhea, hair loss and fatigue are not the major concern with children's exposure to arsenic. The main problem, Heslep argued in his letter to the EPA, is long term effects, "since we are dealing here with materials known to be carcinogenic as well as mutagenic and teratogenic (capable of causing birth defects) and capable of producing delayed neurotoxic effects."

Heslep also sent the EPA extensive information on the testing procedure used and on the test results both at Monterey and at Hidden Valley Park. Because of the extremely high levels found, Heslep recommended that the EPA's estimates of human health risks from arsenic "should be corrected and modified."

Four years after Heslep's letter, the EPA still has not adopted any standards for playgrounds, nor has it made any recommendation for surface exposure standards for arsenic.

To make matters worse, arsenic-based wood preservatives tend to rise to the surface when it rains. The danger from this leaching apparently continues for a number of years. A second round of tests in 1981 at playgrounds in the San Francisco Bay area showed arsenic levels as high as 320 ug/100 cm² at Hidden Valley -- two years after the first tests aroused concern.

Most health experts agree that gathering data on arsenic's effect on children is not an easy task. It is usually difficult for physicians to diagnose arsenic poisoning,

*Letter to the EPA's Office of Pesticide Programs, Feb. 23, 1979.

particularly if they do not specifically suspect it. "If a child comes in with a belly ache, what doctor would think of arsenic poisoning?", observes state epidemiologist and pediatrician, Dr. Richard Jackson.

The wood preservative industry argues that there is no evidence that residues of arsenic on playground equipment are harmful. "You could eat a 2 X 4 foot long log and the wood would kill you before the chemicals could," claimed Murray Blondheim, sales manager for Permapost Products Co. of Hillsboro, OR.

But California health officials contend that industry has purposely not studied the problem. "Industry has been playing this Catch-22 game," Jackson said. "When we say there are high residues, they say there are not standards or tests" (to establish high residue levels).

At the same time, there are problems with not treating wood at all. Untreated wood lasts only three to five years, compared to 10 to 30 years for treated lumber. Untreated wood in the long term therefore not only increases costs but can also pose a serious risk to children. In San Mateo, California, for example, a group of parents were concerned about exposing their children to toxic wood preservatives, and put up an untreated wood playground structure. Four years later, in 1981, a wood post, weakened by dry rot, collapsed and killed a nine-year-old boy.

Some experts are also worried that simply banning arsenic could lead to more widespread use of other even more toxic preservatives, such as PCP, which is already widely used in playgrounds. Says California state health official Robert Schlag: "I've become concerned that banning arsenic will leave a big door open for PCP, which is a very dangerous chemical."

PCP -- not to be confused with the street drug of the same name -- may not be as well known as other pesticides such as 2,4,5-T or DDT, but it is used in literally hundreds of consumer products to kill insects, snails and fungi. These items range from lawn care products to paints and wood preserving kits. About 80 million pounds of PCP are produced annually in the U. S. As a result, the chemical now permeates our environment. According to one U.S. government study, 81 percent of Americans have traces of PCP in their bodies, compared to only 1.6 percent who have levels of malathion, another widely used pesticide.

Like arsenic, PCP can be inhaled, ingested or absorbed through the skin. It is extremely irritating and is toxic to the liver, kidneys and central nervous system. PCP also contains tetradoxin (TCDD), a contaminant of Agent Orange that has been linked to cancer, birth defects, nerve damage and a range of other health problems.

Other contaminants of PCP include other dioxins (less powerful than TCDD, but in higher concentrations) and hexachlorobenzene, which is linked to cancer in test animals. Little is known about PCP's long term effects, but several incidents point to possible problems with children's exposure to the substance:

- ° PCP has been directly responsible for the deaths of at least 11 persons, including two newborn infants at a St. Louis hospital in 1969. In that incident, 20 babies were exposed to PCP mistakenly used as a disinfectant in diapers and sheets. All other 18 infants became ill, some so seriously that they required blood transfusions.

- ° In 1980, tests revealed that 32 Kentucky residents living in log homes treated with wood preservatives had concentrations of PCP in their blood more than 25 times higher than people living in untreated homes. Two children, aged two and four, had the highest PCP levels.

But virtually nothing has been done about the possible dangers of PCP exposure in playgrounds. "We simply don't have any data on children or playgrounds," Dr. Roy Ing of the federal Centers for Disease Control in Atlanta said. Ing added that some parents in Louisville, Kentucky were concerned about their children playing on PCP-treated wood in playgrounds. "But none of the parents wanted to have children used as guinea pigs, so no testing was done," he said. A local health official commented in frustration: "We had to rely on EPA's limited testing information at that time, and the manufacturer's data which stated the chemicals were at a safe level."

According to California health official Schlag, levels of arsenic and PCP on playground equipment may not have any acute or immediate effects. "And yet, the excess exposure to arsenic and PCP may compete with the growth of a child's body," says Schlag.

Despite Heslep's letter and information on high levels of arsenic on wood surfaces, the EPA moved slowly to consider restricting the use of toxic wood preservatives. When the agency finally came out with some proposals in February, 1981 -- two years after Heslep's letter -- the EPA failed to even address the playgrounds issue. The proposed modifications recommended that applicators wear protective clothing, that most indoor uses be banned, and that "treated wood not be used in a manner which may result in direct exposure to domestic animals or livestock, or in the contamination of food, feed, or drinking or irrigation water." Seemingly more concerned about pets and other animals, the EPA made no mention of children in its proposals.

The EPA also chose to ignore Heslep's recommendation that it "specify permissible surface residues (for arsenical wood preservatives) in much the same manner as pesticide tolerances are set for food crops."

The EPA is now in the process of drafting a final agreement with the wood preservative industry. The agreement would place the burden on the industry to regulate itself. Joan Warshawsky, head of the EPA's Special Pesticide Review Section, said the agreement would not be substantially different from the EPA's 1981 proposals. The draft agreement does not specifically address playgrounds, nor does it specify any surface residue standards. It does state that "wood treated with PCP or creosote should not be used where it will be in frequent or prolonged contact with bare skin unless it is treated with an effective sealer." There is no such recommendation for arsenic preservatives, however.

Warshawsky said the EPA's position means that industry is expected to monitor the quality of its own treated wood products. If there are complaints from the public, the EPA would have the right to rescind a manufacturer's license to produce treated wood. But some health officials express concern about this approach. Dr. Richard Jackson says that a blanket industry self-monitoring program "would not be in the public's or workers' best interests."

Jackson said the California Department of Health Services is putting together an information packet for school districts, parks and recreation departments on the risks and benefits of particular wood treatments. Jackson said the information is "basically targeted for new playgrounds," not for playgrounds already treated with wood preservatives. Nor does the information address the potential problem of PCP.

Warshawsky said that the EPA does not have responsibility for existing playground equipment treated with wood preservatives. "That is the Consumer Product Safety Commission's purview," she said. "The problem is that before Reagan's cuts the Commission showed some interest in the problem, but after it was hit with the cuts, its interest fell."

Clearly, children are now caught in a regulatory gap, with no federal agency willing or able to take responsibility for reducing their exposure to toxic wood preservatives. Thus, it will be up to state and local government to reduce children's playground exposures and to explore alternatives to toxic preservatives.

There are currently at least eight alternative wood preservatives on the market. The major alternatives used in playgrounds are copper-8-quinolate (Cu-8), used by some manufacturers only on request, and Niedox 10, manufactured by Columbia Cascade of Portland, Oregon. The problem, according

to Warshawsky, is that the EPA has not "done comprehensive research on any" of the alternative wood preservatives. What is known is that Cu-8, a copper treatment in a mineral spirits base, is generally less effective than arsenicals or PCP, particularly when used in the ground. It is also more expensive than commonly used preservatives. Niedox-10 is a combination of boric acid, wax paraffin and petroleum. Columbia Cascade advertises it as "non toxic" but Warshawsky said the EPA had no data on Niedox-10.

In the absence of EPA testing, it may be up to state governments to do their own testing, or to put pressure on the EPA to evaluate the safety and effectiveness of these possible alternatives to arsenic and PCP.

Without firm data on alternatives, local governments may have to consider using metal instead of wooden playground equipment, even though metal is generally not considered as attractive or flexible. In addition, sealers could be applied to keep the preservatives from leaching on to the wood surface. There are a number of sealers available, including urethane, latex epoxy, varnish or shellac. However, sealants should be used carefully. The EPA's Warshawsky says her agency does not recommend using sealers on playground equipment, because surfaces become slippery which may result in more injuries. For this reason sealants should only be applied to those parts of equipment that children cannot fall from, or non-slippery sealants should be used. An additional caution, according to John Linde, sales manager for Columbia Cascade, is that a sealer could be counterproductive because it could "seal in moisture which would cause the wood to split open or rot from the inside."

Other measures might include testing wooden playground structures to make sure that, in the absence of any other standards, they do not exceed the California recommended level of 25 ug/100 cm² for arsenic. Preservatives could also be restricted by applying them only to those portions of the wood most likely to rot and least likely to be touched by children -- those portions that are directly in the soil.

The problem is obviously a complex one. Wood preservatives cannot be discontinued altogether; yet children must be protected from their potentially health threatening effects. One thing is clear: the present uncontrolled and unregulated use of wood preservatives in playgrounds cannot continue unchecked.

Recommendations: Wood Preservatives in Playground Equipment

Policy Goal: To prevent exposure of children to toxic wood preservatives in playground structures.

City and County Government:

1. Use of metal instead of wooden playground equipment should be considered.
2. The amount of wood preservatives used in playgrounds should be reduced by applying preservative only in those parts of the equipment most likely to rot (e.g. portions of posts directly in the soil).
3. Wood treated with wood preservatives should be tested before installation for excessively high levels of preservative compounds. Wood with potentially hazardous levels should be returned to the manufacturer or discarded. Treated wood should only be purchased from manufacturers who are able to keep the amount of preservatives at safe levels.
4. Sealants should be applied on treated wood to minimize exposure. If plastic or slippery sealants are used, they should be applied only on those portions of the equipment that children cannot fall from. Non-slippery sealants should be used if possible.
5. The use of preservatives which may be less toxic than arsenic-based and PCP-based preservatives (e.g. Niedox-10 and copper-8-quinolate) should be explored.

State Government:

1. State health departments should circulate information to local governments on the potential hazards of commonly used wood preservatives, and suggest alternative or mitigating treatment.
2. State government should establish "safe" levels of wood preservatives for children and the general public.
3. State governments should do their own testing of the safety or otherwise of potentially less toxic alternatives such as Niedox-10 and Cu-8. In the absence of this testing, pressure should be brought to bear on the EPA and other regulatory agencies to do the required testing, and to develop less toxic alternatives.

ELIMINATING PLAYGROUND HAZARDS: FUTURE DIRECTIONS

In this report, we have looked at everyday environments in which children play, rather than at extreme cases of toxic contamination in communities such as Times Beach and Love Canal.

While the effects of such disasters are often catastrophic physically and psychologically, they do allow for relatively straightforward solutions. At both Times Beach and Love Canal, the problem was "solved" by moving out virtually entire communities.

That kind of solution is obviously not appropriate for the problems outlined in this report. Coping with playground hazards presents different obstacles. In most cases, the dangers are not immediately evident, and the health effects are often delayed. The problem is also so widespread, affecting millions of children in almost every community. There is also a basic belief among the vast majority of the people that playgrounds, almost by definition, are among our safest environments.

The challenge, therefore, is how to raise awareness among parents and children, as well as public officials, about the potential hazards, and then to establish a public policy that reduces or eliminates those hazards.

What is required is an approach that looks at playgrounds as total environments, and then isolates the various environmental stressors that pose potential hazards to children.

It would not be sufficient to eliminate a single hazard without attempting to deal with other hazards as well. For example, if a community implements a pesticide policy to prevent accidental exposure of children, other hazards, such as lead contamination or other toxic chemicals in the soil should also be eliminated. Otherwise the total health effects of removing pesticide exposure would be substantially weakened.

Communities need to establish guidelines for what constitutes "safe" playgrounds. This requires setting minimum standards in the design and siting phase and then in the actual operation of the park or playground later on. For example, local codes should establish how far from a freeway a play facility should be built and the kinds of soil and water standards needed to establish its safety. Guidelines would also need to be established to regulate construction of play facilities on or near landfills, and the maximum levels of wood preservatives permitted in playground equipment and other structures. Once a park has been built, the amount of pesticides used in the park would have to be regulated.

If a playground site does not meet these minimum standards, it should be closed down, rather than pose a continuing health risk to children.

Nor should policy be restricted only to those play areas surrounded by a fence. Children by their nature play everywhere, which means ensuring that they do not gain access to abandoned plants containing toxic chemicals, and that they do not play directly next to pollution-emitting industries or in other contaminated areas.

While government has a substantial responsibility to eliminate all playground hazards, accomplishing this ambitious goal will not occur overnight. In the meantime, parents and children need to be educated about the potential hazards. Schools have an important role to play in this area. They need to examine their own policies regarding playground siting, pesticides, and so on. They also need to educate children about potential hazards in places where they play. For example, children need to be taught about the dangers of playing in parks newly-sprayed with pesticides, or in abandoned plants and other obviously hazardous facilities. Parents need to be warned about the greater hazards to infants who are more likely to crawl in the dirt and through bushes, and to put their hands in their mouths.

But these education efforts cannot take the place of a coordinated effort to make sure play areas are safe environments for children.

The solutions we propose are not necessarily expensive ones. In times of shrinking budgets there is an understandable reluctance to deal with a problem until it becomes a problem. Too often it takes media exposure to precipitate a government response. As citizens awareness grows, so have the number of lawsuits filed by affected individuals against local government. In the long term, it may prove cheaper and certainly easier for local governments to make pragmatic changes in how parks and playgrounds are designed, and to eliminate chemical hazards that currently exist in places where children play.

Recommendations: Standards and Public Education

Policy Goals: To set standards for playground construction and operation, and to educate the public about existing or potential hazards.

City and County Government:

1. Local boards of health or public health commissions should be empowered to close parks and playgrounds failing to meet minimum standards set by state or local agencies.
2. A public awareness program should be initiated, consisting of the following:
 - a. Parents should be encouraged to report abandoned industrial plants in which children are playing to local fire or health departments;
 - b. Parents should attempt to keep children out of areas recently sprayed with pesticides. They should also be made aware of possible lead contamination in parks near freeways. They should discourage particularly infants from putting their hands in their mouths while playing, and from eating leaves or dirt. Children should also be encouraged to wash their hands after playing;
 - c. Schools should develop classroom materials to educate children about toxic hazards in play areas;
 - d. Boards of health and hospitals should develop training programs for medical personnel, social workers and teachers on symptoms of chemical exposure to children.

State Government:

1. State environmental regulation departments or public health departments should establish minimum standards for health and safety conditions at parks and playgrounds. These standards should be based on (but may exceed) OSHA standards for toxic chemical exposure.
2. State department of education should work with environmental and health agencies to develop educational materials for use in schools and by parent groups and community organizations.

3. State governments should assist local agencies to implement the education programs outlined above. Some "demonstration" programs could be funded initially, and then expanded to other areas.

RESOURCES FOR ACTION

Publications:

Alternatives to the Land Disposal of Hazardous Wastes: An Assessment for California. Toxic Waste Assessment Group, Governor's Office of Appropriate Technology, State of California, 1981.

Review of alternative technologies for disposal of high priority wastes, including pesticides, PCB's, cyanide, toxic metal, halogenated organics and non-halogens. Very detailed. Usefulness not limited to California.

CBE Environmental Review, Published by Citizens for a Better Environment, 59 E. Van Buren, Suite 1600, Chicago, IL 60605. Cost: \$15.00 membership fee includes subscription to bi-monthly publication.

Covers wide range of topics, including pesticides, toxic waste handling, and air pollution. Organization has reputation for excellent research and effective community organizing.

Center for the Integration of Applied Sciences, 1010 Grayson Street, Berkeley, CA 94710 (415) 540-8912.

Publishes numerous articles and information sheets on wide range of issues, including booklets on *Bacillus Thuringiensis*, Flea Management, Rat Management, General Pest Management, IPM Program Development, Shade Tree IPM, etc. Write to the Center for a catalogue of publications.

Community Right to Know: Hazardous Materials Disclosure Information Systems. A Handbook for California Communities and their Officials.

Golden Empire Health Systems Agency, 827 Seventh Street, Sacramento, CA Sept. 1982. Cost: \$8.50

A thorough review of community right to know legislation, including model ordinances, review of toxic substances, and listing of agencies and organizations regulating or concerned with hazardous substances and wastes. Usefulness not limited to California.

Exposure, Waste and Toxic Substances Project of the Environmental Action Foundation, 724 Dupont Circle Building, Washington, DC 20036.

Cost: \$25 regular subscription, \$15 citizen group, \$10 low-income or senior citizen, \$50 business per annual subscription.

A monthly news journal on waste and toxic issues.

IPM Practitioner, BioIntegral Resource Center, Rt. 1, Box 28A, Winters, CA 95694.

Cost: \$25.00/year (regular rate); \$15.00 (low income); \$50.00 (institutional). Sample copy: \$1.00.

Monthly review of state of the art information on urban and agricultural pest management system.

NCAP News Northwest Coalition for Alternatives to Pesticides. PO Box 375, Eugene, OR 97440

Cost: \$8.00/year (individuals) \$15.00/year (institutions).

The Coalition also publishes a series of "information packets" on topics ranging from integrated pest management, 2,4-D, 2,4,5-T and water quality to herbicide use in forestry industry and economics of pesticide use.

Publicly Administered Pest Control Programs and Their Regulation in Alameda County. Published by Citizens for a Better Environment, 88 First Street, Suite 600, San Francisco, CA 94105.

A model study indicating how pesticide use can be researched on a local level. One of a series of reports on San Francisco Bay Area counties.

Waste and Toxic Substances Resource Guide, Waste and Toxic Substances of the Environmental Action Foundation (see above listing for address).

Cost: \$2.00

Winning the Right to Know: A Handbook for Activists, by Caron Chess. Published by the Conference on Alternative State and Local Policies, 2000 Florida Avenue, NW, Washington, DC 20009, April, 1983.

Cost: \$8.95

The most complete guide for organizers on how to get community right to know legislation implemented on a state or local level. Written by a key figure in the passage of Philadelphia's right to know legislation, the book outlines in detail the stages of that campaign as well as other successful campaigns. It also contains a detailed bibliography and list of resources for organizers.

Organizations:

This is a listing of organizations working on some of the concerns addressed in this booklet.

Center for Integration of Applied Sciences

1010 Grayson Street
Berkeley, CA 94710
(415) 524-8404

This organization, also known as the John Muir Institute, provides technical assistance to local governments, and is one of the leading organizations in the country working on Integrated Pest Management.

Citizens for a Better Environment

Offices:

<u>Chicago</u>	59 East Van Buren Suite 1600 Chicago, IL 60605 (312) 939-1984
<u>Los Angeles</u>	1081 Westwood Boulevard Suite 235 Los Angeles, CA 90024 (213) 824-1984
<u>Milwaukee</u>	536 West Wisconsin Avenue Suite 502 Milwaukee, WI 53203 (414) 271-7475
<u>Minnesota</u>	127 Seventh Street, North Suite 204 Minneapolis, MN 55403 (612) 341-3555
<u>San Francisco</u>	88 First Street Suite 600 San Francisco, CA 94105 (415) 777-1984

Citizens for a Better Environment works on a variety of issues related to the environment, including toxic wastes, air and water pollution and pesticides, with an emphasis on government policy.

Citizens Clearinghouse for Hazardous Wastes
PO Box 7097
Arlington, VA 22207
(703) 532-6816

This organization, directed by Lois Gibbs, provides "citizen groups, individuals, and small municipalities with information needed to understand and resolve their chemical waste problems."

Delaware Valley Toxics Coalition
1315 Walnut Street
Suite 1632
Philadelphia, PA 19107
(215) 735-7200

Works on a variety of environmental issues in the Philadelphia area. Helped pass the first community "right to know" legislation in the country. Presently very interested in toxic hazards to children.

Environmental Action Foundation
Wastes and Toxic Substances Project
724 Dupont Circle Building
Washington, DC 20036
(202) 296-7570

Offers technical assistance and organizing expertise to community groups and public officials; services include information packets, up-to-date information on state waste management plans, contacts with activists across the country, and Exposure, a monthly publication.

League of Women Voters Education Fund
1730 M Street, NW
Washington, DC 20036
(202) 296-1770

Gives League members and others substantive facts, the procedural know-how and the financial backing necessary to be effective in their communities on hazardous waste issues. Issues good educational publication on toxics, including a free newsletter about hazardous wastes.

National Coalition Against the Misuse of Pesticides
530 7th Street, SE
Washington, DC 20003
(202) 543-4313

A national membership organization that promotes alternatives to pesticides, has an information clearinghouse, monitors regulatory agencies, and does advocacy on legislation.

National Pesticide Telecommunications Network (NPTN)

Medical University of South Carolina
Dept. of Industrial and Clinical Pharmacology
171 Ashley Avenue
Charleston, SC 29403
(800) 845-7633

Helps identify pesticide products. Recommends treatment for specific cases of pesticide exposure. Provides information on symptoms. For use by health professionals only. Toll free number answered 24 hours a day, 7 days a week.

Northwest Coalition for Alternatives to Pesticides

PO Box 375
Eugene, OR 97440
(503) 344-5044

A coalition of 75 member organizations in Oregon, Washington State, Idaho, Montana, and Northern California. In addition to the Eugene office, it has four regional offices, in Seattle, Asotin, WA, Arcata, CA, and Grants Pass, OR.

Urban Environment Conference

1314 14th Street, NW, 3rd Floor
Washington, DC 20005
(202) 797-0446

An alliance of national labor, minority and environmental organizations which focuses on occupational and environmental health issues, runs programs and provides technical assistance to grassroots organizations.

U. S. Environmental Protection Agency

EPA Region 1
Federal Building,
Boston, MA 02203
(617) 223-7210
(CT, ME, MA, NH, RI, VT)

EPA Region 3
6th and Walnut Streets
Philadelphia, PA 19106
(215) 597-9814
(DE, MD, PA, VA, WV, DC)

EPA Region 5
230 S. Dearborn
Chicago, IL 60604
(312) 353-2000
(IL, IN, OH, MI, WI, MN)

EPA Region 7
East 11th Street
Kansas City, MO 64106
(816) 374-5493
(IA, KS, MO, NE)

EPA Region 9
215 Fremont Street
San Francisco, CA 94105
(415) 556-2320
(AZ, CA, NV, HI, Guam,
American Samoa, Pacific Terr.)

EPA Region 2
26 Federal Plaza
New York, NY 10007
(212) 264-2525
(NJ, NY, PR, VI)

EPA Region 4
345 Courtland Street NE
Atlanta, GA 30308
(404) 881-4727
(AL, GA, FL, MS, NC, SC, TN, KY)

EPA Region 6
1201 Elm Street
Dallas, TX 75270
(214) 767-2600
(AR, LA, OK, TX, NM)

EPA Region 8
1860 Lincoln Street
Denver, CO 80295
(303) 837-3895
(CO, UT, WY, MT, ND, SD)

EPA Region 10
1200 Sixth Avenue
Seattle, WA 98101
(206) 442-1220
(AK, ID, OR, WA)

EPA regional offices vary in their effectiveness and in their agreements with individual states as to which problems state or federal governments are responsible for.